

REMARKS

Reconsideration and further examination of the subject patent application in light of the present Amendment and Remarks is respectfully requested. Claims 38-48 are currently pending in the application. Claims 38-48 stand rejected.

Rejections under 35 U.S.C. §102(b)

Claims 38-48 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Pat. No. 3,085,195 to Anderson in view of U.S. Pat. No. 3,348,137 to Nelson. Applicant respectfully traverses these rejections.

Independent claims 38 and 41 have been further limited to "exciting a molecule containing a plurality of atoms having different atomic weights with the plurality of generated signals to decouple the atoms of different atomic weights". Support for the addition limitations may be found in numerous locations throughout the specification. For example, a discussion of the decoupling of a water molecule containing a pair of spin-spin coupled atoms is provided in page 6, lines 14-28 of the specification. The decoupling of a water molecule of oxygen-17 and hydrogen by applying an excitation pulse at the Larmor frequency of oxygen-17 and an excitation pulse at the Larmor frequency of hydrogen is discussed at page 7, lines 23-30 of the specification.

Claims 38 and 41 have also been limited to "receiving a plurality of experimental signals within different Larmor frequency ranges from the plurality of decoupled atoms of the molecule excited by the plurality of generated signals." The receipt of experimental signals from both atoms of a water molecule of oxygen-17 and hydrogen is

discussed beginning on page 7, line 23 and continuing to page 8, line 3 of the specification.

Claims 38 and 41 are now clearly differentiated over the combination of Anderson and Nelson. For example, the claimed invention is now limited to "exciting a molecule containing a plurality of atoms having different atomic weights with the plurality of generated signals to decouple the atoms of different atomic weights." Instead of exciting a molecule, Anderson excites "gyromagnetic bodies." The excited Anderson gyromagnetic bodies may include "a first and second group of gyromagnetic bodies having different gyromagnetic resonance frequencies as of, for example, hydrogen nuclei in benzene (C_6H_6) and hydrogen nuclei in ethyl alcohol (CH_3CH_2OH)" (Anderson, col. 3, lines 22-26). As such, the Anderson gyromagnetic bodies are separate, distinct molecules.

Since Anderson excites different gyromagnetic bodies, there is no "exciting a molecule containing a plurality of atoms having different atomic weights" within Anderson. Moreover, since Anderson is directed to the reference frequencies of gyromagnetic bodies instead of atoms, there is also no "receiving a plurality of experimental signals within different Larmor frequency ranges from the plurality of decoupled atoms of the molecule excited by the plurality of generated signals."

Moreover, Nelson also fails to meet this claim limitation. In this regard, Nelson provides a strong field H_2 that "effectively decouples the secondary nuclei from the nuclei of the observed group" (Nelson, col. 3, lines 19-21). Since Nelson separates the decoupled nuclei into secondary groups and observed groups, there is no

observation of more than one atom of a molecule or "receiving a plurality of experimental signals within different Larmor frequency ranges from the plurality of decoupled atoms of the molecule excited by the plurality of generated signals."

Moreover, any modification of Anderson to observe the Larmor frequencies of the constituent atoms of a molecule would involve a fundamental change in Anderson, since Anderson is directed to gyromagnetic bodies. As such, any combination of Anderson with another reference would no longer establish the prima facie case of obviousness.

For any of the above reasons, the combination of Anderson and Nelson fails to teach or suggest each and every claim limitation or establish the prima facie case of obviousness. Since the combination fails to teach each and every claim limitation or establish the prima facie case of obviousness, the rejections are improper and should be withdrawn.

Claims 44-48 stand rejected under 35 U.S.C. §103(a) as being obvious over Anderson, Nelson and U.S. Pat. No. 5,160,891 to Keren. However, Keren also fails to provide any teaching or suggestion of "exciting a molecule containing a plurality of atoms having different atomic weights with the plurality of generated signals to decouple the atoms of different atomic weights" or "receiving a plurality of experimental signals within different Larmor frequency ranges from the plurality of decoupled atoms of the molecule excited by the plurality of generated signals."

As such, the combination of Anderson, Nelson and Keren fails to teach or suggest each and every claim limitation or establish the prima facie case of obviousness. Since

the combination fails to teach each and every claim limitation or establish the prima facie case of obviousness, the rejections are improper and should be withdrawn.

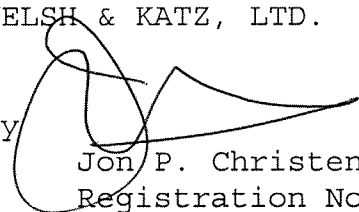
Closing Remarks

For the foregoing reasons, applicant submits that the subject application is in condition for allowance and earnestly solicits an early Notice of Allowance. Should the Primary Examiner be of the opinion that a telephone conference would expedite prosecution of the subject application, the Primary Examiner is respectfully requested to call the undersigned at the below-listed number.

The Commissioner is hereby authorized to charge any additional fee which may be required for this application under 37 C.F.R. §§ 1.16-1.18, including but not limited to the issue fee, or credit any overpayment, to Deposit Account No. 23-0920. Should no proper amount be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 23-0920. A duplicate copy of this sheet(s) is enclosed.

Respectfully submitted,
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By


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